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Does Geographic Relocation Induce the Loss of Features from a Single Speaker's Native Dialect?

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Abstract

Over the past few years, academics such as Sankoff and Blondeau (2007) and Harrington (2006) have exhibited a marked interest in dialect variation and language change across the lifespan. Though it was acknowledged that individuals could temporarily adapt their language to accommodate to other interlocutors, permanent changes to their underlying grammar were previously thought impossible. What has come to light, however, is that as individuals we have been given increasing opportunities to be much more mobile; and as a result, our language has too. The aim of this study is to provide evidence for the claim that social and geographical mobility (in this case geographical) can cause an individual's language to change. It was motivated by the belief that language cannot change after an individual has surpassed the critical period. The study focuses on one individual speaker in particular: the musician Ringo Starr. The speaker in question lived in Liverpool until the age of 40, before relocating to America. The data for this investigation were sourced from a number of TV and Radio interviews with Starr, taken from 20 years prior to and 20 years after his geographic relocation. In both cases, the interlocutors were speakers of British and American English varieties. The study examines three stable variables that exist in the speaker's native dialect of Liverpool English — realisation of /t/ to /r/, non-rhoticity, and NURSE ~ SQUARE merger — and investigates whether these remain stable features, are lost completely, or are altered by geographical relocation. The study found that, although the speaker did not lose any features of his native dialect completely, the salience of the variables was affected by the move to the US. The speaker reduced his levels of /t/ to /r/ realisation and became more rhotic in certain phonological and lexical contexts. He retained the NURSE ~ SQUARE merger, but the results showed that he increased his frequency of F1 of NURSE vowels, articulating them slightly lower. Starr never acquired new, American variables such as the alveolar flap. What these results demonstrate is that an individual is capable of changing their language after the supposed "critical period"; it shows that not all change can be attributed to temporary accommodation. Dialect contact with varieties of American English appears to have resulted in some changes to Starr's grammar.

Does Geographic Relocation Induce the Loss of Features from a Single Speaker's Native Dialect?

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1 Introduction

The claim that one's language cannot change late in adult life has been embraced, contested, and widely investigated (see Sankoff 2004). It is generally accepted that there exists a "critical period" for language development — the optimal period during which language learning is most efficient. It is believed that once an individual surpasses this period, their linguistic behaviour will remain stable for the rest of their life. However, a growing number of linguistic studies (e.g., Harrington 2006, Sankoff and Blondeau 2007) have begun to question such claims and found that this may not necessarily be the case. There is, in fact, evidence to suggest that a number of internal and external factors can impact a so-called "established" grammar. Chambers (1992) believes our increased experience of geographical, social, and occupational mobility to be such contributors. Fewer of us remain in the same place, in the same career, or in the same social circle throughout our life; and as a result, we are interacting with a wider variety of people — and thus a wider variety of dialects — often on a global scale (Chambers 1992). The present paper contributes to ongoing research into later life language change that largely suggests that individuals have the ability to modify their linguistic system as adult speakers.

This paper will focus on one speaker in particular, the musician Ringo Starr, and endeavour to determine if he shows concomitant evidence of losing features of his native dialect or gaining features of a new one as a consequence of his geographic mobility. The results will show selective evidence of both.

2 Background

2.1 Background of Speaker

The speaker under analysis is Ringo Starr, a popular musician and former drummer with the rock band *The Beatles.* Starr was born in 1940 and raised in a working-class district of Liverpool, a north-western city of England. In his adult life, Starr experienced both geographic and social mobility. Before becoming a musician, he worked in a local factory; and since the age of 8, he has received no education. In the 1980s, Starr relocated from the United Kingdom to the United States of America. As a result of growing up in Liverpool, Starr's native dialect is Liverpool English (LE), a dialect that is often referred to as "Scouse". Scouse is considered to be one of the UK's most recognisable accents because of its distinct prosodic features (Marotta and Barth 2005). The most salient markers of LE are consistent with most Northern accents in that there is a short /a/ in both BATH and TRAP, and typically /ʊ/ (or /ʌ/) in both FOOT and STRUT. The consonants of LE are articulated much like the consonants in most Northern dialects, with the exception of /t/, which is particularly versatile as it may be affricated word-initially or realised as /r/ or /h/ word-medially (Watson 2007b). Another of its unique features is "Liverpool lenition", which refers to the frication or affrication of underlying plosives (Honeybone 2001), for example:

(1) **C**rime [kxɾaːm]
(2) E**x**pe**c**t [ɛxspɛxt]

In this analysis, I will examine three variables that are typical of LE but also typical of other North-Western dialects: /t/-to-/r/, non-rhoticity, and the merger between the SQUARE and NURSE vowels.

The data for this investigation have been sourced from YouTube and taken from a number of interviews conducted with Starr in the 1960s and 2000s, specifically in the periods of 1965–1969 and 2008–2011. These years were chosen in order to represent approximately 20 years after and 20 years prior to Starr's geographic relocation. I do not analyse the years individually but refer to them as "pre-move" and "post-move". Pre-move refers to the time when Starr was living in his native region and post-move represents the period after he moved.

2.2 Background of Variables

As this paper is concerned with the effects that living in a new dialect region can have on a speaker's native accent, the three variables to be examined are those that are considered stable in that native dialect. The first two variables, /t/-to-/r/ and r-vocalisation, are generally accepted as features of Northern dialects. The NURSE ~ SQUARE merger is specific to LE.

2.2.1 The /t/-to-/r/ Rule

The /t/-to-/r/ rule refers to the potential in some Northern dialects for /t/ to be realised as /r/ in certain phonological environments (Wells 1982). This is thought to be both phonologically and lexically restricted (Watson 2007b), although remaining undetermined since it has received little focus in the literature. The phonological conditions suggest that /t/-to-/r/ can only occur in environments where /t/ is preceded by a short vowel and followed by a boundary vowel (Honeybone 2001). A boundary vowel means that a word-final /t/ is followed by a word-initial vowel. Wells (1982) typically presents this rule as t → r / [short V] __ # V. While this is considered a stable dialect variable in the North, it is not possible in General American (GA), which we will consider to be the "contact dialect". In GA, /t/ is usually realised as a tapped /t/ sound (Schuh 2012), or more specifically the alveolar flap /ɾ/.

2.2.2 Vocalisation of /r/

Although not specifically Northern in character, r-vocalisation is a major difference between General British and General American dialects (Wells 1982). R-vocalisation is more generally known as the split between non-rhotic and rhotic accents. It applies to dialects that exclude /r/ from preconsonantal and word-final environments (Asprey 2007). The majority of British dialects exhibit this phenomenon and usually compensate for the loss of /r/ with modification of the preceding vowel, i.e., centring diphthongisation (Wells 1982). Liverpool is considered non-rhotic whereas GA is considered rhotic, pronouncing /r/ any time that it is reflected in the spelling (Wells 1982). This includes the lexical sets of vowel sounds represented by the following words: NURSE, START, FORCE, LETTER, NEAR, SQUARE, and CURE. What should be noted, however, is that Starr may have been exposed to r-less dialects of US English (African American English and Southern English) to a greater extent than other immigrants from the UK to the US due to his connections in the music industry. However, from my understanding, Starr has not lived in areas with a high concentration of speakers of these varieties, nor has he had much contact with speakers of these varieties.

2.2.3 NURSE ~ SQUARE Merger

The NURSE ~ SQUARE merger is considered one of the most characteristic features of LE (Watson 2007a). In most other English dialects, the NURSE lexical set is realised as a mid-central vowel [ɜː], and the SQUARE vowel is usually realised as a diphthong [ɛə] (Liberman 2014). In LE, however, the lexical sets have merged into a mid-front vowel (Watson and Clark 2013). In GA, NURSE and SQUARE vowels are separate and usually pronounced with a rhotic /r/ (Liberman 2014).

3 Methodology

3.1 Recording, Transcription, and Methodology

The data were recorded using Audacity (2015), transcribed using ELAN (n.d.), and forced aligned using FAVE (n.d.).

3.2 Consonantal Coding

In order to identify and code for the consonantal tokens (/t/-to-/r/ realisation and r-vocalisation), a handcoder tool was used within Praat (Boersma and Weenink 2015). Praat allows for the analysis of phonetic speech segments, and the handcoder tool applies constraints to the search of speech segments. The words sourced by Praat were then coded in terms of their adherence to the standard variable: "0" corresponds to the expected native variant; "1" to the expected non-native variant, or the least common of the two; and "2" to the alveolar flap found in American dialects. This is outlined below:

Variable 1
/r/ realised = 0; /t/ realised = 1; /d/ realised = 2
Variable 2
/r/ absent = 0; /r/ present = 1

Consonants were also coded for place in the syllable, word class of the word they appeared in, and the age at which they were produced.

Some tokens found by the handcoder were not always applicable. As already established in the literature, the realisation of /t/-to-/r/ is only possible between a short vowel and a boundary vowel. When sourcing words for the variable /t/-to-/r/, however, the handcoder returned tokens in which /t/ was preceded by a tense vowel. These tokens were not included in the data as the environment was not relevant to the variable in question. When coding for /r/ vocalisation, I became aware that if /r/ appeared word-finally and the following segment began with a vowel, speakers of LE (in common with other British dialects such as West Yorkshire and Tyneside) were often known to use a "linking /r/" (Wells 1982). This is considered a modification of the word-initial vowel, rather than being categorised as a pronunciation of the final /r/ consonant. As a result, this does not identify with a pronunciation of rhotic /r/, and relevant examples were not therefore coded. This eliminated 12 tokens from the dataset.

3.3 Vowel Coding

In order to code for vowel tokens, sound files and accompanying text files were uploaded to FAVE-extract. FAVE-extract measures the F1 and F2 for all segmented vowels in a textgrid. It automatically extracts vowel formant measurements at various time points and returns two data files: the first contains basic formant measurements, and the second contains those that have been normalised. Normalised formants attempt to reduce variation that could have been caused by physiological factors (such as size of mouth), and will be used here. As the vowels of NURSE and SQUARE are diphthongs, average measurements were taken at two points: F1 and F2 (20%) and F1 and F2 (80%). The data were analysed statistically in Microsoft Excel, where vowels were further coded for following segment, lexical set, and age.

A Grubbs test for outliers (a statistical test based on the assumption of normality) was performed on the F1 and F2 measurements for the vowels in question. One outlier was found in the pre-move F2 measurement for the NURSE word *work*. In order to verify this, I located the token in Praat. The reason for the outlier depends on what action needs to be taken. I found that there was no error in measurement and no evidence of overlapping noise. As a result, it was clear that this was a genuine outlier, and it was therefore retained for analysis.

4 Hypotheses

It is more likely that an individual will experience later life changes to their phonetics than to their underlying grammar (Honeybone 2010). Therefore, I initially hypothesised that the geographic relocation would have an effect on Starr's dialect at the phonetic level: in particular, that Starr would increase his rhoticity but not become fully rhotic; that we would see a decline in his realisation of /t/ as /r/; and that he would not lose the NURSE ~ SQUARE merger completely (as this would involve acquiring new phonemes), but that the NURSE and SQUARE vowels would show evidence of becoming more distinct.

5 Results and Discussion

This section will present and discuss the results of each variable, individually.

5.1 Realisation of /t/-to-/r/

Table 1 shows the percentages of /t/-to-/r/ realisations in all possible environments. The results show that /t/ is realised as /r/ approximately 88% of the time for the pre-move data. Post-move, Starr had decreased this by almost 60%. In addition, the realisation of /t/ as /t/ increased from 28% to 72%, which is more than double what it was pre-move.

Table 1: Percentage of /t/-to-/r/ in possible environments

	Pre-move	**Post-move**
Realised as /r/	88%	28%
Realised as /t/	12%	72%
Realised as /ɾ/	0%	0%
Number of tokens	33	24

Interestingly, in this particular environment, there is no recorded evidence of Starr realising /t/ as the American alveolar flap /ɾ/. When Starr did reduce the rate of /r/ realisation in the post-move data, he reverted to the alternative /t/. A chi-square test performed on the data (comparing levels of /t/ realisation pre- and post-move) returned a p-value of 0.0000371. This suggests that the decline in /t/ being realised as /r/ was statistically

significant. As we have already established, this was not in favour of the American alternative: the alveolar flap /ɾ/. So, whilst we can surmise from the data that, since relocation, Starr has not remained stable in his /t/-to-/r/ realisation, we can infer that this is not due to the acquisition of a replacement variable.

We could suggest that geographical relocation has encouraged Starr to reassess his native accent. The fact that he simply increases his rate of /t/ realisation could show a conscious effort to detach from an aspect of his native dialect: /t/ realised as /r/ is often negatively stigmatised, with /r/ realisation holding connotations of a lack of education and a working-class background (Watson 2007b). In the 1960s, when the Beatles first rose to fame, pride in being working class was prolific (Taylor 2011, as cited in Trudgill, 1983:145), and the term was used to represent a collection of people that worked hard. Today, however, the definition of working class has pejorated and is arguably associated with lack of money, lack of education, and a lack of social morals (BBC News 2007). As a result, Starr may have consciously attempted to change his dialect in order to correspondingly change the way that people might perceive him. What should be noted, however, is that some speakers have also shown a tendency to reduce variables that could be considered unusual in order to identify with a new community (Trudgill 1986). By realising his /r/s as /t/s, Starr can lose what new members of his social circle may view as less appealing features of his native dialect, whilst still using a feature (/t/) that connects to his local identity. In addition to this, the fact that /ɾ/ is not implemented in any environment would provide evidence to the theory that it is easier to lose features of a standard variable than acquire new features from a variant.

The literature (e.g., Buchstaller et al. 2013) also suggests that in addition to a phonological restriction, the realisation of /t/-to-/r/ is restricted lexically. Of the 60 tokens collected, 54 were restricted to the lexemes reproduced in Table 2.

Table 2: Proposed lexical restriction of /t/-to-/r/ realisation

At	Got	Put
Bit	Lot	That
Get	Not	What

While we cannot expect this to be duplicated for every Northern speaker, it could provide a solid base for further research concerning /t/-to-/r/ realisation.

5.2 Vocalisation of /r/

Although there remain some rhotic accents in Central Lancashire (Burnley) and the southwest of England, the majority of English dialects, including Northern ones, are considered to be non-rhotic. Most American dialects, on the other hand, are rhotic. Non-rhotic accents are specifically non-rhotic word-medially, such as *particular*, or word-finally, such as *car*. To investigate this variable, levels of /r/ vocalisation in all environments were measured both pre-move and post-move (Table 3).

Table 3: Percentage of r-vocalisation in all environments

	Pre-move	**Post-move**
Level of non-rhoticity	77%	63%
Level of rhoticity	23%	37%
Number of tokens	100	134

Generally, the results show that Starr has increased his levels of rhoticity. Pre-move, Starr vocalised /r/ just 23% of the time; post-move, this figure had increased to 37%. A chi-square test performed on the data returned a p-value of 0.026, which shows that the increase is statistically significant and not simply due to chance. However, this does not indicate that Starr's accent has become rhotic: a rhotic speaker will always vocalise /r/, but it was still absent 63% of the time in the post-move data.

Figure 1 shows the percentage of tokens at each age for each phonological environment, while Tables 4 and 5 show cross-tabulations for each environment.

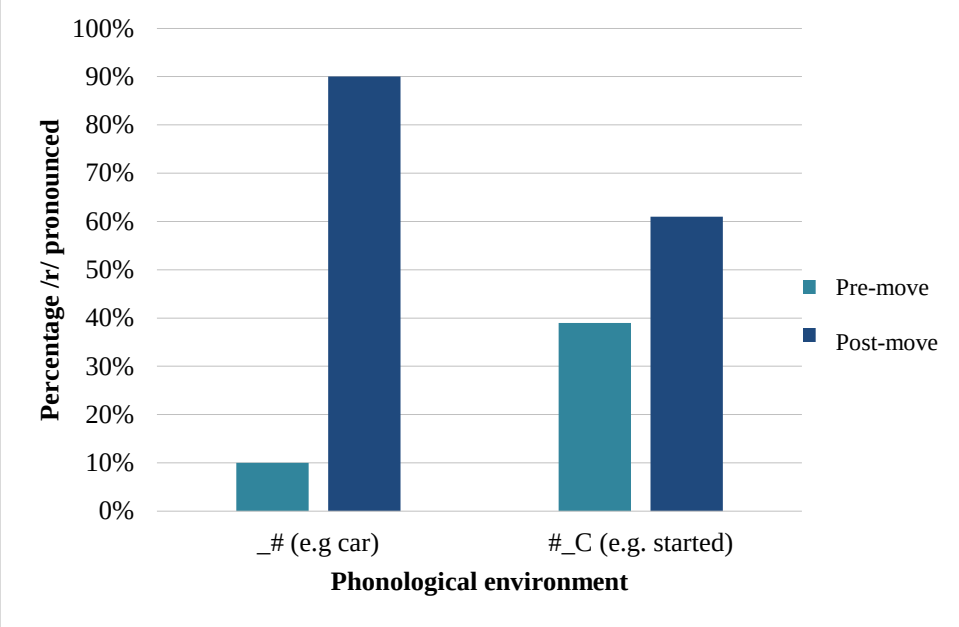

Figure 1: Percentage of r-vocalisation in each phonological environment at each age.

Table 4: Cross-tabulation of word-final r-vocalisation

	Pre-move	**Post-move**
/r/ absent	88% (*n*=23)	66% (*n*=52)
/r/ present	12% (*n*=3)	44% (*n*=27)
Number of tokens	26	79

Table 5: Cross-tabulation of word-internal r-vocalisation

	Pre-move	**Post-move**
/r/ absent	65% (*n*=51)	75% (*n*=33)
/r/ present	35% (*n*=17)	25% (*n*=11)
Number of tokens	68	44

A chi-square test on the word-final data gave a p-value of 0.027, which indicates that the vocalisation of /r/ significantly increased between the ages of 27 and 67; this would seemingly confirm initial suspicions. On the other hand, the word-internal data indicate no relationship between the increase in /r/ vocalisation and the speaker's age. A Fisher's exact test returned a p-value of 0.001, which suggests that there is a significant relationship between r-vocalisation, speaker age, and phonological environment. In order to evaluate this further, a multivariate analysis was conducted, confirming that the age/location of the speaker was significant (p=0.041). The grammatical class of the word was also deemed significant as to whether /r/ was vocalised, with nouns and verbs the most favoured (with a factor weight of 0.799). Multivariate analysis did not find the phonological environment to be a significant factor, suggesting that the initial chi-square test could not take into account underlying variables. What these results may suggest, however, is that what looked like a word-internal vs. word-final difference may in fact have been one initiated from the nouns/verbs vs. non-nouns/verbs effect, i.e., one perhaps owing to word class. All things considered, the data do show that pronunciation of /r/, both word-medially and word-finally, has increased. They also confirm my hypothesis that Starr's accent would not become fully rhotic, as rhoticity was not categorical throughout (Figure 1). Trudgill (1983) argues that any modifications made to one's voice would be variable, irregular, and inconsistent. The data go some way to demonstrating this notion, with no feature ever fully implemented in all of its possible contexts.

The subconscious or conscious level of Starr's increase in rhoticity is hard to determine. In America, rhoticity is considered a characteristic of prestige speech (Asprey 2007), whereas the UK has no such concept.

We could suggest that Starr made a conscious effort to increase his levels of rhoticity as a way of making his accent appear more appealing (and less working class) in the eyes of American audiences. Le Page (as cited in Trudgill, 1983:144) believes that people employ different linguistic behaviours in an attempt to "resemble as closely as possible those of the group or groups with which from time to time we [speakers] wish to identify".

In his 1983 paper *Acts of conflicting identities*, Trudgill analyses the linguistic behaviours of British singers and discusses the way in which they seemingly modify their pronunciation to sound "more American". According to Trudgill (1983), British singers would imitate quasi-American features, such as the non-prevocalic /r/, in order to "americanise" their accent. Trudgill (1983) believed that, at the time when The Beatles were performing, America dominated the field of music culturally; as a result, the singers felt the need to imitate Americans. In 1963, for example, The Beatles used non-prevocalic /r/ approximately 48% of the time. The late 1960s, however, saw a rise in the popularity of British pop music and a consequent decline in the ideal American model; this meant that British singers were no longer trying so hard to sound American (Trudgill 1983). In 1969, for example, The Beatles used non-prevocalic /r/ just 3% of the time — a decline of 45%. This highlights that individuals, and specifically the band that Starr was a member of, are able to adapt their linguistic behaviour to match what is deemed suitable and acceptable at the time. Starr may be taking this concept from his musical performance and realising it in his personal life.

Furthermore, the results cannot be attributed to accommodation to the immediate interlocutor, as none of his interviewers had a rhotic accent. Much of the data that were taken post-move, however, did take place on American television, and Starr could therefore have been accommodating to what he anticipated to be the wider audience.

Trudgill (1986) suggests that frequent accommodation to a linguistic variable that is different from our own can theoretically become part of a speaker's dialect, potentially replacing the native feature. This could also be a reason for the increase in rhoticity.

In addition to this, Chambers (1992) suggests that the words we hear more frequently, such as function words, are the ones that are most likely to influence our use or acquisition of a particular dialect feature. The correlation between grammatical class and the pronunciation of /r/ may be a reflection of how often we are exposed to these lexical categories. Aside from function words, we are also highly exposed to content words such as nouns and verbs on a day-to-day basis. This frequency of input may have directly influenced the increase in Starr's vocalisation of /r/. Nycz (2013) suggests that such examples of lifespan change should be, and almost always are, driven by words we frequently hear, since our memories of them will be updated more often as they are heard and used more frequently. Chambers (1992) also reports that it is easier to acquire a dialect feature that is patterned orthographically to our own. Although /r/ is not pronounced by non-rhotic speakers in words such as *car*, *far*, or *started*, the fact that it exists in the spelling may mean that generally non-rhotic speakers could easily connect the spelling with the pronunciation.

5.3 NURSE ~ SQUARE merger

Table 6 shows the average formant measurements for NURSE and SQUARE vowels at both ages. As these vowels are merged in the speaker's native accent, we should expect to see relatively similar formant measurements for both pre-move and post-move F1 and F2 if the merger remains unaffected.

Table 6: F1 and F2 formant measurements at 20% and 80%

Lexical set	Formant	Mean Hz by year	
		Pre-move	**Post-move**
NURSE	F1 20%	598	601
	F2 20%	1056	1743
	F1 80%	606	638
	F2 80%	1290	1802
	# Tokens	**20**	**16**
SQUARE	F1 20%	619	623
	F2 20%	1700	1659
	F1 80%	628	669
	F2 80%	1713	1673
	# Tokens	**16**	**17**

Pre-move, the average formant measurements for SQUARE were 594Hz for F1 and 1173Hz for F2. Post-move, both formant measurements had increased, but only slightly. For NURSE, F1 increased from 624Hz to 646Hz, and F2 decreased from 1707Hz to 1666Hz (see Table 7). T-tests carried out on both sets of data found a statistically significant difference in the change of F1 for NURSE (p<0.031). A Spearman's Rank correlation test on NURSE F1 by age/location gave a moderately positive correlation of 0.2, suggesting that as the speaker's age increased, the F1 of NURSE also increased, resulting in a lower vowel. In contrast, the SQUARE words remained stable. In General American English, both the NURSE and SQUARE vowels are pronounced lower and more front; however, except for a slight lowering in the F1 of NURSE, we see little evidence of Starr's adoption of those pronunciations.

Table 7: Average of F1 and F2 formants at 20% and 80%

Lexical set	Formant	Mean Hz by year		p-value <
		Pre-move	Post-move	
NURSE	F1	594	619	0.031
	F2	1173	1774	1
# Tokens		**20**	**16**	
SQUARE	F1	624	646	1
	F2	1707	1666	1
# Tokens		**16**	**17**	

5.4 Age and Location

It is worth bearing in mind that age is conflated with location: one is not necessarily a proxy for the other. If Starr had remained in Liverpool, would we expect the results to be exactly the same as in pre-move? This might not necessarily be the case. When we take the NURSE ~ SQUARE merger, the results demonstrate that Starr had slightly lowered his F1 formant of NURSE vowels. However, as we age, our vocal tracts change and this may consequently affect our production of certain vowels (Xue and Hao 2003). This research could imply that, rather than being a result of social effects, changes that appear to be dialect related may result only or also from physiological changes. In similar stead, the realisation of /t/ as /r/ is thought to be an ongoing sound change and could therefore arguably be unstable, regardless of Starr's relocation.

6. Conclusion

In linguistics, one often encounters the notion that a person's underlying grammar, and consequently their dialect, is unable to change later in life, and especially not after the critical period. The aim of this paper, then, was to investigate such claim with respect to one particular speaker that had undergone geographic relocation. The investigation found the reduction of certain native dialect features but never their complete loss. Some aspects of Starr's accent could be argued to have become "americanised", but he has never been fully detached from his Liverpudlian upbringing. He increased his levels of r-vocalisation, but his accent never became fully rhotic. He also reduced the frequency with which he realised /t/ as /r/, opting instead for /t/, but he never acquired the American alveolar flap. While Starr experienced slight change in the articulation of NURSE vowels, the merger was not lost, on the whole remaining completely stable. It could actually be suggested that an individual is not merely affected by their location but by social group, accommodation to other interlocutors, and even personal representation, which should also therefore be considered as factors contributing to what is thought to be later-life dialect change.

6.1 Further Study

An interesting development to this study would be to analyse recent data in which both American and English interlocutors interview Starr. This would allow us to determine whether Starr's dialect has changed as a result of geographic relocation or whether he is merely accommodating to his audience, which at the moment remains speculation.

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